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103. *B. coarctata* (Sm. Nyl.) Maine (Willey). (Tuck. N. A. Lich. 2. 15.)
 104. *B. vernalis* (L.) Fr. Harrison (Blake).
 105. *B. sanguino-atra* (Fr.) Tuckerm. Harrison (Blake). A specimen from Mt. Ktaadn named *Lecidea sanguinaria* Ach. seems to be referable to the above.
 106. *B. carnulenta* Tuckerm. Maine (Willey). (Tuck. N. A. Lich. 2. 23.)
 107. *Lecidea contigua* Fr. Mt. Ktaadn (Blake).
 108. *Buellia parasema* (Ach.) Th. Fr. Orono (Harvey).
 109. *B. Ederi* (Ach.) Br. & Rostr. Coast of Maine (Tuckerm.). (Tuck. N. A. Lich. 2. 102.)
 110. *B. geographica* (L.) Tuck. Coast of Maine (Tuckerm.). (Tuck. N. A. Lich. 2. 103.)

Tribe III.—Graphidacei.

FAM. 1.—XYLOGRAPHEI.

111. *Xylographa parallela* Nyl. Maine (Pringle). (Tuck. N. A. Lich. 2. 112.)
 112. *X. disseminata* Willey. Mt. Desert (Willey). (Tuck. N. A. Lich. 2. 112.)
 113. *X. opgraphella* Nyl. Maine (Tuckerm.). (Tuck. N. A. Lich. 2. 113.)

FAM. 3.—OPEGRAPHEI.

114. *Graphis scripta* (L.) Ach. Cumberland (Blake); Orono (Harvey).

Tribe IV.—Caliciacei.

FAM. 1.—SPHÆROPHOREI.

115. *Sphærophorus fragilis* (L.) Pers. Mt. Ktaadn (Blake).

Lichens new to North America.

BY JOHN W. ECKFELDT.

During the past few years I have had under examination numerous collections of Lichens from all portions of North America, and among them quite a notable number have proven to be new. Many of these have been submitted to the kind observation of Drs. Nylander and Muller, and I have to thank them for the determinations. Not wishing to burden them with too much material from our country, I herewith submit the following paper on some noteworthy species.

PANNARIA APPLANATA n. sp.

Thallus squamulose, more or less irregularly lobulate, the divisions at the border cut-crenate, flat, quite closely adnate to the substrata; the centre sparsely granulose, pale olivaceous or a rusty yellow. Hypothallus showing in distinct patches and of a paler color. Apothecia scattered, rounded and elevated with a

receding margin, simple and slightly paler than the disk. Spores small, ellipsoid or ovoid, hyaline, entire, $\frac{8 \times 9}{2\frac{1}{2} \times 3}$ mic.

Occurring on various barks in San Luis Potosi, Mexico, 1887. Mr. C. G. Pringle, No. 155.

THELOTREMA CARNEA n. sp.

Thallus orbicular, becoming irregularly diffused over large areas, thin-membranaceous, minutely granulose, soft, frequently traversed by narrow waving anastomosing black lines, from pale carnate to rosy pink. Apothecia small to very minute, sunken in the thalline layer, open, the interior exciple quite distinct from the outer border, which is erect with a rounded subcrenulate margin. Disk black, slightly roughened, the exterior exciple thickened. Spores oblong, triseptate $\frac{12 \times 14}{3 \times 3\frac{1}{2}}$ mic.

This striking species occurs on trunks of *Celtis occidentalis* in the low country near St. Martinsville, Louisiana. A. B. Langlois.

BIATORA (PATELLARIA) FLOECULESCENS n. sp.

Thallus more or less mixed, made up principally of small lobulate or crustaceous scales, roughish and covered by an extremely fine flocculent pubescence, imparting to the surface a soft appearance, ashy brown to darker. Apothecia quite flat, but becoming convex. Disk chestnut brown, margin simple, entire, receding in older stages of growth, paler within. Spores simple, ovoid, hyaline, entire $\frac{9 \times 10}{5 \times 6}$ mic.

On bark near Monterey, Mexico. Mr. C. G. Pringle, 1887, no. 253.

BIATORA (PATELLARIA) DISPERSA n. sp.

Thallus smooth, uneven, finely granulate, limited by a fine line and dispersed evenly over the bark area, ash color and becoming paler at the border. Apothecia adnate, sessile, very flat; disk smooth and surrounded by a waving, irregular, paler, true margin which is enclosed by a thicker, light thalline ring, reddish brown to black, entire. Spores hyaline, broadly ovoid $\frac{9 \times 12}{6 \times 7}$ mic.

On barks, San Luis Potosi, Mexico. Mr. C. G. Pringle, 1887.

BIATORA SUTURALIS n. sp.

Thallus slightly thickened, crustaceous and becoming finely granulose, broken up into areola-like divisions, but not squamose, interspersed throughout by distinct, prominent, waving suture-like, black, diffuse lines, from pale ashy to cream color.

Apothecia flattish, scattered at first, a little concave, but afterwards somewhat convex, margin soon disappearing, disk brown. Spores acicular, hyaline $\frac{30 \times 40}{3 \times 4}$ mic.

On barks, San Luis Potosi, Mexico. Mr. C. G. Pringle, 1888, no. 183.

ARTHONIA DISTINCTA n. sp.

Thallus thin, smooth, white, indeterminate, slightly mealy. Apothecia very minute, round-lobed, and disposed to become radiate in small clusters, slightly sunken or in part even with the thallus; disk black, with a rough or uneven surface. Spores dark, 3-4-locular, broadly ovoid $\frac{15 \times 18}{7 \times 8}$ mic.

On smooth barks, San Luis Potosi, Mexico. Mr. C. G. Pringle, 1888. The similarity of this plant to *A. radiata* is marked, but certain characters determine it to be distinct.

TRYPETHELIUM PRINGLEI n. sp.

Thallus thin, smooth or generally finely tuberculate, tubercles rounded, elevated, diffused, from pale yellow to white; stromas prominent, round to oblong and irregularly protruding, paler than the surrounding crust. Osteoles minute, rounded, very prominent, dark brown. Spores broadly ellipsoid, quadrisepate $\frac{15 \times 20}{4 \times 6}$ mic.

A well marked species contrasting strikingly with *T. oligocarpum* Mull. Lich. Australia. Occurs on the trunks of trees near San Luis Potosi, Mexico. Mr. C. G. Pringle, no. 226.

TRYPETHELIUM SCITULENS n. sp.

Thallus slightly transversely wrinkled and smoothish, of an opaque, olive green color. Stromas prominent, rounded, becoming at length oblong, solitary or generally confluent, and more or less of the same color as the thallus. Osteoles numerous, very minute and closely approximate, mostly brown. Spores oblong ellipsoid, 10-septate $\frac{27 \times 33}{10 \times 12}$ mic.

On the trunks of various trees near San Luis Potosi, Mexico. Mr. C. G. Pringle, no. 200.

PYRENULA PAPULIFORMIS n. sp.

Thallus extremely thin, evanescent, diffuse, pale ash color, and often differing but slightly from the normal shade of the bark. Apothecia somewhat conoidal, black with a round spread-

ing perithecium; osteole poreiform, innate. Epithecium pale, whitish. Hymenium black. Spores ellipsoid, elongated, hyaline, bilocular $\frac{1.4 \times 1.6}{4 \times 6}$ mic.

On trunks with smooth barks, San Luis Potosi, Mexico. Mr. C. G. Pringle. Not unlike *P. majuscula* Nyl. of the Hawaiian Islands in general appearance.

Notes on the Chromatophores of *Astrophyllum sylvaticum* Lindb. (*Mnium cuspidatum* Hedw.), and of some other Plants.

BY ALFRED C. STOKES.

Among the commonest mosses in my locality is the one usually referred to as *Mnium cuspidatum* Hedw., my specimens having been identified for me by Dr. G. N. Best, of Rosemont, N. J. The plant is always so attractive in appearance at almost any season, that for several years I have been in the habit of collecting it in the autumn, and of keeping it all winter under an inverted glass on my table, where in the diffused light of a warm room it will grow and flourish, and, as I have learned, supply the microscopist with several important objects for investigation, asking in return only that it shall be abundantly furnished with the moisture which it must have or die. I know that it has long been a favorite object of study with microscopical botanists, but I have not been able to learn that the observations which I have had the pleasure of making over it have been anticipated.

But the leaf-cells of *Astrophyllum sylvaticum* are so transparent, especially in the adult and the young conditions, that microscopical examination may be made of them in their living state. In these young and in the mature, but not old cells, the chromatophores (chloroplasts or chlorophyll-bodies) are so few and so conveniently scattered over the upper and the lower cell-surfaces that they may be studied with some ease and the protoplasmic cell-contents examined with as great comfort while the whole leaf is living in a 4 per cent. solution of sugar, in which its structure is apparently unaltered, and where for a time its functions are not vitiated. It is especially to the structure of the chloroplasts in these and in some other leaves that this paper is devoted.